Monitoring the Cisco Unified IP Phone Remotely

Each Cisco Unified IP Phone has a web page from which you can view a variety of information about the phone, including:

- Device information
- Network configuration information
- Network statistics
- Device logs
- Streaming statistics

This chapter describes the information that you can obtain from the phone's web page. You can use this information to remotely monitor the operation of a phone and to assist with troubleshooting.

You can also obtain much of this information directly from a phone. For more information, see Chapter 6, "Viewing Model Information, Status, Statistics, and Security Information on the Cisco Unified IP Phone."

For more information about troubleshooting the Cisco Unified IP Phone, Chapter 8, "Troubleshooting the Cisco Unified IP Phone."

This chapter includes these topics:

- Accessing the Web Page for a Phone, page 7-2
- Disabling Web Page Access, page 7-3
- Device Information, page 7-4
- Network Configuration, page 7-5

- Network Statistics, page 7-10
- Device Logs, page 7-16
- Streaming Statistics, page 7-18

Accessing the Web Page for a Phone

To access the web page for a Cisco Unified IP Phone, perform the following steps. If you cannot access the web page, it may be disabled. See the "Disabling Web Page Access" section on page 7-3 for more information.

Procedure

Step 1 Obtain the IP address of the Cisco Unified IP Phone using one of these methods:

- Search for the phone in Cisco Unified CallManager by choosing **Device** > **Phone**. Phones registered with Cisco Unified CallManager display the IP address on the Find and List Phones web page and at the top of the Phone Configuration web page.
- On the Cisco Unified IP Phone, press the **Settings** button, choose **Network Configuration**, and then scroll to the IP Address option.

Step 2 Open a web browser and enter the following URL, where *IP_address* is the IP address of the Cisco Unified IP Phone:

http://*IP_address*

The web page for a Cisco Unified IP Phone includes these topics:

- **Device Information**—Displays device settings and related information for the phone. For more information, see the "Device Information" section on page 7-4.
- **Network Configuration**—Displays network configuration information and information about other phone settings. For more information, see the "Network Configuration" section on page 7-5.

- **Network Statistics**—Includes the following hyperlinks, which provide information about network traffic:
  - Ethernet—Displays information about Ethernet traffic. For more information, see the "Network Statistics" section on page 7-10.
  - Port 1 (Network)—Displays information about network traffic to and from the 10/100 SW port on the phone. This port connects the phone to the network. For more information, see the "Network Statistics" section on page 7-10.
  - Port 2 (Access)—Displays information about network traffic to and from the 10/100 PC port on the phone. This port connects the phone to a network device, such as a computer. For more information, see the "Network Statistics" section on page 7-10.
  - Port 3 (Phone)—Displays information about network traffic to and from the phone. For more information, see the "Network Statistics" section on page 7-10.
- **Device Logs**—Includes the following hyperlinks, which provide information that you can use for troubleshooting:
  - Debug Display—Provides information that may be useful to the Cisco TAC if you require assistance with troubleshooting
  - Stack Statistics—Displays information about the phone's stack tasks. For more information, see the "Device Logs" section on page 7-16.
  - Status Messages—Displays various system messages. For more information, see the "Device Logs" section on page 7-16.
- **Streaming Statistics**—Includes the following hyperlink:
  - Stream 1—Display a variety of streaming statistics. For more information, see the "Streaming Statistics" section on page 7-18.

Disabling Web Page Access

For security purposes, you may choose to prevent access to the web pages for a phone. If you do so, you will prevent access to the web pages that are described in this chapter and to the Cisco Unified CallManager User Options web pages.

To disable access to the web pages for a phone, follow these steps from Cisco Unified CallManager Administration:

Step 1 Choose **Device > Phone**.

Step 2 Specify the criteria to find the phone and click **Find**, or click **Find** to display a list of all phones.

Step 3 Click the device name to open the Phone Configuration window for the device.

Step 4 From the Web Access drop-down list box, choose **Disabled**.

Step 5 Click **Update**.

Note Some features, such as Cisco Quality Report Tool, do not function properly without access to the phone web pages. Disabling web access also affects any serviceability application that relies on web access, such as CiscoWorks.

To enable web page access when it is disabled, follow the preceding steps, but choose **Enabled** in Step 4.

Device Information

The Device Information area on a phone's web page displays device settings and related information for the phone. Table 7-1 describes these items.

To display the Device Information area, access the web page for the phone as described in the "Accessing the Web Page for a Phone" section on page 7-2, and then click the **Device Information** hyperlink.

Table 7-1 Device Information Area Items

Item	Description
MAC Address	Media Access Control (MAC) address of the phone
Host Name	Unique, fixed name that is automatically assigned to the phone based on the MAC address.

Table 7-1 Device Information Area Items (continued)

Item	Description
Phone DN	Directory number assigned to the phone
App Load ID	Identifier of the firmware running on the phone
Boot Load ID	Identifier of the factory-installed load running on the phone
Version	Version of the phone hardware
Expansion Module 1	Phone load ID for the first Cisco Unified IP Phone 7914 Expansion Module if connected to the phone
Expansion Module 2	Phone load ID for the second Cisco Unified IP Phone 7914 Expansion Module, if connected to the phone
Hardware Revision	Version of the phone hardware
Serial Number	Serial number of the phone
Model Number	Model number of the phone
Codec	Codec used by the phone
Amps	Indicates whether 3 volt or 5 volt amplifier is being used by the phone
C3PO Revision	Revision of the Cisco 3 port switch in the phone
Message Waiting	Indicates if there is a voice message waiting on any line for this phone

Network Configuration

The Network Configuration area on a phone's web page displays network configuration information and information about other phone settings. Table 7-2 describes these items.

You can view and set many of these items from the Network Configuration Menu the Cisco Unified IP Phone. For more information, see Chapter 4, "Configuring Settings on the Cisco Unified IP Phone."

To display the Network Configuration area, access the web page for the phone as described in the "Accessing the Web Page for a Phone" section on page 7-2, and then click the **Network Configuration** hyperlink.

Table 7-2 Network Configuration Area Items

Item	Description
DHCP Server	IP address of the Dynamic Host Configuration Protocol (DHCP) server from which the phone obtains its IP address.
BOOTP Server	Indicates whether the phone obtains its configuration from a Bootstrap Protocol (BootP) server.
MAC Address	Media Access Control (MAC) address of the phone based on the MAC address.
Host Name	Unique, fixed name that is automtically assigned to the phone.
Domain Name	Name of the Domain Name System (DNS) domain in which the phone resides.
IP Address	Internet Protocol (IP) address of the phone.
Subnet Mask	Subnet mask used by the phone.
TFTP Server 1	Primary Trivial File Transfer Protocol (TFTP) server used by the phone.
Default Router 1–5	Default router used by the phone (Default Router 1) and optional backup routers (Default Router 2–5.
DNS Server 1–5	Primary Domain Name System (DNS) server (DNS Server 1) and optional backup DNS servers (DNS Server 2–5) used by the phone.
VLAN ID	Voice Virtual Local Area Network (VLAN) configured on a Cisco Catalyst switch in which the phone is a member.
Admin. VLAN ID	Voice VLAN in which the phone is a member.

Table 7-2 Network Configuration Area Items (continued)

Item	Description
Call Manager 1–5	Host names or IP addresses, in prioritized order, of the Cisco Unified CallManager servers with which the phone can register. An item can also show the IP address of an SRST router that is capable of providing limited Cisco Unified CallManager functionality, if such a router is available. For an available server, an item will show the Cisco Unified CallManager server IP address and one of the following states: • Active—Cisco Unified CallManager server from which the phone is currently receiving call-processing services. • Standby—Cisco Unified CallManager server to which the phone switches if the current server becomes unavailable. • Blank—No current connection to this Cisco Unified CallManager server. An item may also include the Survivable Remote Site Telephony (SRST) designation, which identifies an SRST router capable of providing Cisco Unified CallManager functionality with a limited feature set. This router assumes control of call processing if all other Cisco Unified CallManager servers become unreachable. The SRST Cisco Unified CallManager always appears last in the list of servers, even if it is active. An item will include a shield icon if the phone has an authenticated connection to the Cisco Unified CallManager server. It will display a padlock icon if the phone has an authenticated connection to the Cisco Unified CallManager server.
Information URL	URL of the help text that appears on the phone.

Table 7-2 Network Configuration Area Items (continued)

Item	Description
Directories URL	URL of the server from which the phone obtains directory information.
Messages URL	URL of the server from which the phone obtains message services.
Services URL	URL of the server from which the phone obtains Cisco Unified IP Phone services.
DHCP Enabled	Indicates whether DHCP is being used by the phone.
DHCP Address Released	Indicates the setting of the DHCP Address Released option on the phone's Network Configuration menu.
Alternate TFTP	Indicates whether the phone is using an alternative TFTP server.
Erase Configuration	Indicates the setting of the Erase Configuration option on the phone's Network Configuration menu.
Forwarding Delay	Indicates whether the internal switch begins forwarding packets between the PC port and the switch port on the phone when the phone becomes active.
Idle URL	URL that the phone displays when the phone has not been used for the time specified by Idle URL Time.
Idle URL Time	Amount of time in seconds that elapses before the URL shown in Idle URL appears.
Authentication URL	URL that the phone uses to validate requests made to the phone web server.
Proxy Server URL	URL used to proxy HTTP requests for access to non-local host addresses from the phone HTTP client.
PC Port Disabled	Indicates whether the PC port on the phone is enabled or disabled.

Table 7-2 Network Configuration Area Items (continued)

Item	Description
SW Port Configuration	Speed and duplex of the switch port, where: • A—Auto Negotiate • 10H—10-BaseT / half duplex • 10F—10-BaseT / full duplex • 100H—100-BaseT / half duplex • 100F—100-BaseT / full duplex • No Link—No connection to the switch port
PC Port Configuration	Speed and duplex of the switch port, where: • A—Auto Negotiate • 10H—10-BaseT / half duplex • 10F—10-BaseT / full duplex • 100H—100-BaseT / half duplex • 100F—100-BaseT / full duplex • No Link—No connection to the PC port
TFTP Server 2	Backup TFTP server that the phone uses if the primary TFTP server is unavailable.
User Locale	User locale associated with the phone user. Identifies a set of detailed information to support users, including language, font, date and time formatting, and alphanumeric keyboard text information.
Network Locale	Network locale associated with the phone user. Identifies a set of detailed information to support the phone in a specific location, including definitions of the tones and cadences used by the phone.
Handset Only Mode	Indicates whether the speakerphone and headset are enabled (No) or disabled (Yes) on the phone. When the speakerphone and headset are disabled, the phone will function with the handset only.
User Locale Version	Version of the user locale loaded on the phone.

Table 7-2 Network Configuration Area Items (continued)

Item	Description
Network Locale Version	Version of the network locale loaded on the phone.
GARP Enabled	Indicates whether the phone learns MAC addresses from Gratuitous ARP responses.
Voice VLAN Enabled	Indicates whether the phone allows a device attached to the PC port to access the Voice VLAN.
Auto Line Select Enabled	Indicates whether the phone shifts the call focus to incoming calls on all lines.
Video Capability Enabled	Indicates whether the phone can participate in video calls when connected to an appropriately equipped PC.

Related Topic

- Configuring Settings on the Cisco Unified IP Phone, page 4-1
- Configuring Features, Templates, Services, and Users, page 5-1

Network Statistics

These Network Statistics areas on a phone's web page provide information about network traffic on the phone:

- Ethernet area—Displays information about Ethernet traffic. See the "Ethernet Statistics" section on page 7-11 for detailed information. Table 7-3 describes the items in this area.
- Port 1 (Network) area—Displays information about network traffic to and from the 10/100 SW port on the phone. See the "Port 1 (Network), Port 2 (Access), and Port 3 (Phone) Statistics" section on page 7-12 for detailed information.
- Port 2 (Access)—Displays information about network traffic to and from the 10/100 PC port on the phone. See the "Port 1 (Network), Port 2 (Access), and Port 3 (Phone) Statistics" section on page 7-12 for detailed information.

- Port 3 (Phone)—Displays information about network traffic to and from the phone. See the "Port 1 (Network), Port 2 (Access), and Port 3 (Phone) Statistics" section on page 7-12 for detailed information.

To display a Network Statistics area, access the web page for the phone as described in the "Accessing the Web Page for a Phone" section on page 7-2, and then click the **Ethernet Information**, the **Access**, or the **Network** hyperlink.

Ethernet Statistics

The Ethernet area on a phone's web page provides detailed information about Ethernet traffic to and from the phone.

To display this area, access the web page for the phone as described in the "Accessing the Web Page for a Phone" section on page 7-2, and then click the **Ethernet** hyperlink.

Table 7-3 describes the items in the Ethernet Statistics area.

Table 7-3 Ethernet Area Items

Item	Description
Tx Excessive Collisions	Indicates whether packets are being lost because of network congestion
Tx Frames	Total number of packets transmitted by the phone
Tx Broadcasts	Total number of broadcast packets transmitted by the phone
Tx Multicasts	Total number of multicast packets transmitted by the phone
Tx Collisions	Total number of collisions that occurred while a packet was being transmitted
Tx Deferred Abort	Total number of transmit packets aborted by the phone
Rx Overruns	Total number of received packets dropped because of buffer overruns
Rx Long/CRC	Total number of received packets dropped because of excessive length

Table 7-3 Ethernet Area Items (continued)

Item	Description
Rx Frames	Total number of packets received by the phone
Rx CRC Errors	Total number of received packets dropped because of invalid CRC information
Rx Bad Preamble	Total number of received packets dropped because of bad Ethernet preamble information
Rx Runt	Total number of received packets dropped because of insufficient length
Rx Multicasts	Total number of multicast packets received by the phone
Rx Broadcasts	Total number of broadcast packets received by the phone
Rx Shorts	Total number of good packets received that are less than 64 bytes size
Rx Longs	Total number of good packets received that are greater than 1522 bytes in size

Port 1 (Network), Port 2 (Access), and Port 3 (Phone) Statistics

The following area on a phone's web page provide information about network traffic to and from ports on the phone:

- Port 1 (Network)—Provides information about the 10/100 SW port
- Port 2 (Access)—Provides information about the 10/100 PC port
- Port 3 (Phone)—Provides information about network traffic to and from the phone

To display any of these areas, access the web page for the phone as described in the "Accessing the Web Page for a Phone" section on page 7-2, and then click the **Port 1 (Network)**, the **Port 2 (Access)**, or the **Port 3 (Phone)** hyperlink.

Table 7-4 describes the items in the Port 1 (Network), Port 2 (Access), and Port 3 (Phone) areas.

Table 7-4 Port Statistics Area Items

Item	Description
Carrier Events	Indicates loss of carrier on the port
Rx totalPkt	Total number of packets received by the phone
Rx crcErr	Total number of packets received with CRC failed
Rx alignErr	Total number of packets received between 64 and 1522 bytes in length that have a bad FCS
Rx multicast	Total number of multicast packets received by the phone
Rx broadcast	Total number of broadcast packets received by the phone
Rx unicast	Total number of unicast packets received by the phone
Rx shortErr	Total number of FCS error packets or Align error packets received that are less than 64 bytes in size
Rx shortGood	Total number of good packets received that are less than 64 bytes size
Rx longGood	Total number of good packets received that are greater than 1522 bytes in size
Rx longErr	Total number of FCS error packets or Align error packets received that are greater than 1522 bytes in size
Rx size64	Total number of packets received, including bad packets, that are between 0 and 64 bytes in size
Rx size65to127	Total number of packets received, including bad packets, that are between 65 and 127 bytes in size
Rx size128to255	Total number of packets received, including bad packets, that are between 128 and 255 bytes in size
Rx size256to511	Total number of packets received, including bad packets, that are between 256 and 511 bytes in size
Rx size512to1023	Total number of packets received, including bad packets, that are between 512 and 1023 bytes in size

Table 7-4 Port Statistics Area Items (continued)

Item	Description
Rx size1024to1518	Total number of packets received, including bad packets, that are between 1024 and 1518 bytes in size
Rx size1519to1548	Total number of packets received, including bad packets, that are between 1519 and 1548 bytes in size
Rx tokenDrop	Total number of packets dropped due to lack of resources (for example, FIFO overflow)
Tx excessDefer	Total number of packets delayed from transmitting due to medium being busy
Tx lateCollision	Number of times that collisions occurred later than 512 bit times after the start of packet transmission
Tx totalGoodPkt	Total number of good packets (multicast, broadcast, and unicast) received by the phone
Tx Collisions	Total number of collisions that occurred while a packet was being transmitted
Tx fifoUnderrun	Total number of transmitted packets dropped because of FIFO underrun
Tx excessLength	Total number of packets not transmitted because the packet experienced 16 transmission attempts
Tx broadcast	Total number of broadcast packets transmitted by the phone
Tx multicast	Total number of multicast packets transmitted by the phone
Tx size64	Total number of packets transmitted, including bad packets, that are between 0 and 64 bytes in size
Tx size65to127	Total number of packets transmitted, including bad packets, that are between 65 and 127 bytes in size
Tx size128to255	Total number of packets transmitted, including bad packets, that are between 128 and 255 bytes in size
Tx size256to511	Total number of packets transmitted, including bad packets, that are between 256 and 511 bytes in size

Table 7-4 Port Statistics Area Items (continued)

Item	Description
Tx size512to1023	Total number of packets transmitted, including bad packets, that are between 512 and 1023 bytes in size
Tx size1024to1518	Total number of packets received, including bad packets, that are between 1024 and 1518 bytes in size
cos 0 Drop	Total number of packets with Class of Service 0 dropped because of threshold checking
cos 1 Drop	Total number of packets with Class of Service 1 dropped because of threshold checking
cos 2 Drop	Total number of packets with Class of Service 2 dropped because of threshold checking
cos 3 Drop	Total number of packets with Class of Service 3 dropped because of threshold checking
cos 4 Drop	Total number of packets with Class of Service 4 dropped because of threshold checking
cos 5 Drop	Total number of packets with Class of Service 5 dropped because of threshold checking
cos 6 Drop	Total number of packets with Class of Service 6 dropped because of threshold checking
cos 7 Drop	Total number of packets with Class of Service 7 dropped because of threshold checking
bpdu Drop	Total number of Bridge Protocol Data Unit frames dropped because of threshold checking
overflow Drop	Total number of packets dropped because of an internal queue overflow
Neighbor Device ID	Identifier of a device connected to this port **Note** Displays only if the connected device supports Cisco Discovery Protocol (CDP).

Table 7-4 Port Statistics Area Items (continued)

Item	Description
Neighbor IP Address	IP address of the neighbor device **Note** Displays only if the connected device supports Cisco Discovery Protocol (CDP).
Neighbor Port	Neighbor device port to which the phone is connected **Note** Displays only if the connected device supports Cisco Discovery Protocol (CDP).

Related Topic

- Configuring Settings on the Cisco Unified IP Phone, page 4-1

Device Logs

The Device Logs area on a phone's web page provide information you can use to help monitor and troubleshoot the phone:

- Debug Display area—Provides information that may be useful to the Cisco TAC if you require assistance with troubleshooting.
- Stack Statistics area—Displays information about the phone's stack tasks. See the "Stack Statistics" section on page 7-16 for detailed information.
- Status Messages area—Displays up to the 10 most recent status messages that the phone has generated since it was last powered up. See the "Status Messages" section on page 7-17 for detailed information.

Stack Statistics

The Debug Display area on a phone's web page displays information about the phone's stack tasks. This information may be useful to Cisco Technical Assistance Center personnel if you require assistance with troubleshooting.

To display the Stack Statistics area, access the web page for the phone as described in the "Accessing the Web Page for a Phone" section on page 7-2, and then click the **Stack Statistics** hyperlink.

Table 7-5 describes the items in the Stack Statistics area.

Table 7-5 Stack Statistics Area Items

Item	Description
Socket Task	Peak stack consumption for the Socket task
Phone Task	Peak stack consumption for the Phone task
DSPPoll Task	Peak stack consumption for the DPPoll task
RTP Task	Peak stack consumption for the RTP task
TLS Task	Peak stack consumption for the TLS task
Config Task	Peak stack consumption for the Config task
Display Task	Peak stack consumption for the Display task
CAST Task	Peak stack consumption for the CAST task
Sidecar Task	Peak stack consumption for the Sidecar task
Audit Task	Peak stack consumption for the Socket task
Undefined Mode	Peak stack consumption for the undefined mode
SVC Mode	Peak stack consumption for the SVC mode
IRQ Mode	Peak stack consumption for the IRQ mode
FIQ Mode	Peak stack consumption for the FIQ mode
SYS Mode	Peak stack consumption for the SYS mode

Status Messages

The Status Messages area on a phone's web page displays up to the 10 most recent status messages that the phone has generated since it was last powered up. You can also see this information from the Status Messages screen on the phone. Table 6-2 describes the status messages that can appear.

Related Topic

- Configuring Settings on the Cisco Unified IP Phone, page 4-1
- Status Menu, page 6-3

Streaming Statistics

A phone streams information when it is on a a call or running a service that sends or receives audio or data. The Stream 1 area on a phone's web page provides information about this stream. Table 7-6 describes the items in this area.

To display a network statistics area, access the web page for the phone as described in the "Accessing the Web Page for a Phone" section on page 7-2, and then click the **Stream 1** hyperlink.

Table 7-6 Streaming Statistics Area Items

Item	Description
Domain	Domain of the phone
Remote Address	IP address of the destination of the stream
Local Address	IP address of the phone
Sender Joins	Number of times the phone has started transmitting a stream
Receiver Joins	Number of times the phone has started receiving a stream
Byes	Number of times the phone has stopped transmitting a stream
Start Time	Internal time stamp indicating when Cisco Unified CallManager requested that the phone start transmitting packets
Row Status	Whether the phone is streaming
Host Name	Host name of the phone
Sender Packets	Total number of packets sent by the phone
Sender Octets	Total number of octets sent by the phone
Sender Tool	Type of audio encoding used for the stream
Sender Reports	Number of times this streaming statistics report has been accessed from the web page (resets when the phone resets)
Sender Report Time	Internal time stamp indicating when this streaming statistics report was generated

Table 7-6 Streaming Statistics Area Items (continued)

Item	Description
Sender Start Time	Time that the stream started
Rcvr Lost Packets	Total number of packets lost
Rcvr Jitter	Maximum jitter of stream
Receiver Tool	Type of audio encoding used for the stream
Rcvr Reports	Number of times this streaming statistics report has been accessed from the web page (resets when the phone resets)
Rcvr Report Time	Internal time stamp indicating when this streaming statistics report was generated
Rcvr Packets	Total number of packets received by the phone
Rcvr Octets	Total number of octets received by the phone
Rcvr Start Time	Internal time stamp indicating when Cisco Unified CallManager requested that the phone start receiving packets
Voice Quality Metrics	
MOS LQK	Score that is an objective estimate of the mean opinion score (MOS) for listening quality (LQK) that rates from 5 (excellent) to 1 (bad). This score is based on audible concealment events due to frame loss in the preceding 8-second interval of the voice stream. For more information, see the "Monitoring the Voice Quality of Calls" section on page 8-23. **Note** The MOS LQK score can vary based on the type of codec that the Cisco Unified IP Phone uses.
Avg MOS LQK	Average MOS LQK score observed for the entire voice stream.
Min MOS LQK	Lowest MOS LQK score observed from start of the voice stream.

Table 7-6 Streaming Statistics Area Items (continued)

Item	Description
Max MOS LQK	Baseline or highest MOS LQK score observed from start of the voice stream. These codecs provide the following maximum MOS LQK score under normal conditions with no frame loss: • G.711 gives 4.5 • G.729 A /AB gives 3.7
MOS LQK Version	Version of the Cisco proprietary algorithm used to calculate MOS LQK scores.
Cmltve Conceal Ratio	Total number of concealment frames divided by total number of speech frames received from start of the voice stream.
Interval Conceal Ratio	Ratio of concealment frames to speech frames in preceding 3-second interval of active speech. If using voice activity detection (VAD), a longer interval might be required to accumulate 3 seconds of active speech.
Max Conceal Ratio	Highest interval concealment ratio from start of the voice stream.
Conceal Secs	Number of seconds that have concealment events (lost frames) from the start of the voice stream (includes severely concealed seconds).
Severely Conceal Secs	Number of seconds that have more than 5 percent concealment events (lost frames) from the start of the voice stream.

Related Topics

- Call Statistics Screen, page 6-16
- Monitoring the Voice Quality of Calls, page 8-23